



University of Manitoba
Faculty of Agriculture
Departments of Plant & Animal Science

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COURSE DETAILS

Course Title & Number:	Grassland Agriculture: Plant, Animal & Environment ANSC4410, PLNT4410
Number of Credit Hours:	3
Class Times & Days of Week:	Monday, Wednesday, Friday. 10:30-11:20am Lab - Monday 2:30-5:15
Location for classes/labs/tutorials:	Classes: Rm 138 Agriculture Building Lab: Rm 138 Agriculture Building
Pre-Requisites:	NA

Instructor Contact Information

Instructor(s) Name:	Dr. Patrick C. Friesen (PF), Instructor, Department of Plant Science
Office Location:	Rm 325 Agriculture Building
Office Hours or Availability:	By appointment Monday, Wednesday, or Friday from 12 - 1pm
Office Phone No.	204-474-8941
Email:	patrick.friesen@umanitoba.ca

Instructor(s) Name:	Dr. Emma J. McGeough (EM), Assistant Professor, Sustainable Grasslands/Livestock Production Systems, Department of Animal Science
Office Location:	Rm 232 Animal Science Building
Office Hours or Availability:	Usually available before or after class within office hours or contact to set up an appointment by email.
Office Phone No.	204-474-8056
Email:	emma.mcgeough@umanitoba.ca

Course Description

Inter-relationships between the biological components of grassland agriculture as they relate to forage production on the Canadian Prairies. Topics include utilization by wild and domestic animals, plant community relationships and role of forages in livestock production systems.

Who should take this course?

- 1) Students interested in animal production.
- 2) Students interested in the maintenance of the perennial grasslands (cultured and native) and the ecological benefits they provide.
- 3) Students interested in the use of perennial species for food and fibre.
- 4) Students interested in diversity in agriculture and how grassland agriculture can be a conduit for enhancing diversity.

General Course Information

Grassland agriculture is important for animal agriculture and for the maintenance of soil quality of lands not suited to annual crop production. The relationship between plant cover, the health of the environment and the production of animals is key to understanding both the utilization of grasslands for animal feed, the productivity of the grassland and the productivity of animal agriculture. The beef production industry in western Canada has been negatively impacted by BSE and other outside influences in the past decade leading to a reduction of lands under perennial cover (pasture, hayfield and range), exposing the landscape to additional risks that come with annual crop production. The maintenance of perennial crops for animal feed provides habitats for many native flora and fauna that would not exist under annual cropping. The economic production of animals for human consumption is important, however all costs and benefits must be understood in order to achieve this in a sustainable manner.

Course Objectives

By the end of this course, Students will:

1. Be able to identify forage crop species, assess their suitability to the area of application and formulate seeding mixtures (if applicable) and a management system for grasslands.
2. Categorize plant growth strategies and generate plant stands that provide adequate agricultural and ecological benefits to the area of concern.
3. Illustrate the production of forages and explain how plant growth and development impact forage quantity and quality.
4. Understand plant and animal interactions to develop and utilize a planned pasture system effectively.
5. Be able to identify requirements of an effecting grazing system.
6. Determine the greenhouse gas footprint of an integrated forage/crop/ruminant livestock operation

Learning Outcomes

Learning outcomes assist: i) students to identify the knowledge, skills, attitudes and personal attributes expected of them to successfully complete their program of studies; ii) faculty to develop learning goals and objectives in their courses and programs, in prioritizing and focusing the learning experiences, and in the selection of appropriate assessment tools and; iii) potential students and outside agencies to assess the quality of our academic programs.

These learning outcomes areas include:

Scholar, Content and technical expertise, Social accountability, Communicator, and Professional

Using Copyrighted Material

Please respect copyright. We will use copyrighted content in this course. I have ensured that the content I use is appropriately acknowledged and is copied in accordance with copyright laws and University guidelines. Copyrighted works, including those created by me, are made available for private study and research and must not be distributed in any format without permission. Do not upload copyrighted works to a learning management system (such as UM Learn), or any website, unless an exception to the *Copyright Act* applies or written permission has been confirmed. For more information, see the University's Copyright Office website at <http://umanitoba.ca/copyright/> or contact um_copyright@umanitoba.ca.

Recording Class Lectures

Drs. Patrick C. Friesen, Emma J. McGeough and the University of Manitoba hold copyright over the course materials, presentations and lectures which form part of this course. No audio or video recording of lectures or presentations is allowed in any format, openly or surreptitiously, in whole or in part without permission of the course instructors. Course materials (both paper and digital) are for the participant's private study and research.

Textbook, Readings, Materials

Textbook(s) – Authors, Titles, Edition

None.

Supplementary Reading:

1. Heide, O.M., 1994. Control of flowering and reproduction in temperate grasses. *New Phytologist* 128:347-362.
2. Glover, J.D., Culman, S.W., DuPont, S.T., Broussard, W., Young, L., Mangan, M.E., Mai, J.G., Crews, T.E., DeHaan, L.R., Buckley, D.H., Ferris, H., Turner, R.E., Reynolds, H.L. and D.L. Wyse. 2010. Harvested perennial grasslands provide ecological benchmarks for agricultural sustainability. *Agriculture, Ecosystems and Environment* 137:3–12.
3. Undersander et al. 2005: *Alfalfa Management Guide*
4. Samson and Knopf, 1994. *Prairie conservation in North America*. *Bioscience* 44:418-421.
5. Browsing and grazing ruminants: are they different beasts? 2003. *Forest Ecology and Management*. 181: 13-21

Additional Materials:

Additional handouts may be given out in class.

Several textbooks (with their library call numbers) can be used as background for the course lecture which include:

- *Grazing Management: An Ecological Perspective* - SF 85 .G73 1991
- *Range Management: Principles & Practices* - SF 85 H56 2001
- *Nutritional Ecology of the Ruminant* - SF 95.V36 1994
- *Agronomy of Grassland Systems* - SB 199 P37 1997
- *Forages – An Introduction to Grassland Agriculture*. Volume 1. Barnes, Nelson, Collins and Moore. 2003 Iowa State University press. Call #: SB 193 F64 2003 v. 1 Location: Reserve desk
- *Cool Forages: Advanced Management of temperate forages*. 2013. S. Bittman and D. Hunt (copies to be given to each group for pasture planning assignment)

Course Technology

It is the general University of Manitoba policy that all technology resources are to be used in a responsible, efficient, ethical and legal manner. The student can use all technology in classroom setting only for educational purposes approved by instructor and/or the University of Manitoba Disability Services. Student should not participate in personal direct electronic messaging / posting activities (e-mail, texting, video or voice chat, wikis, blogs, social networking (e.g. Facebook) online and offline “gaming” during scheduled class time. If student is on call (emergency) the student should switch his/her cell phone on vibrate mode and leave the classroom before using it. (©[S Kondrashov](#). Used with permission)

Recordings (or photographs) are not permitted except when required to do so by Student Accessibility Services.

Course material, where applicable, will be uploaded to UM Learn under both PLNT 4410 and ANSC 4410.

Class Communication

The University requires all students to activate an official University email account. For full details of the Electronic Communication with Students please visit:

[http://umanitoba.ca/admin/governance/media/Electronic Communication with Students Policy - 2014 06 05.pdf](http://umanitoba.ca/admin/governance/media/Electronic_Communication_with_Students_Policy_-_2014_06_05.pdf)

Please note that all communication between instructors and students must comply with the electronic communication with student policy

([http://umanitoba.ca/admin/governance/governing_documents/community/electronic communication with students policy.html](http://umanitoba.ca/admin/governance/governing_documents/community/electronic_communication_with_students_policy.html)). You are required to obtain and use your U of M email account for all communication between yourself and the university.

Expectations: I Expect You To

Students are expected to attend class regularly, read assigned materials in a timely manner, participate in discussion and complete all assignments and examinations with academic integrity and honesty. Students are encouraged to ask questions for clarification and seek assistance from instructors if they require additional explanations or resources. In addition, students are expected to conduct themselves in a manner that is respectful of the learning environment, other students and instructors.

Academic Integrity:

Plagiarism or any other form of cheating in examinations, term tests or academic work is subject to serious academic penalty. Cheating in examinations or tests may take the form of copying from another student or bringing unauthorized materials into the exam room. Exam cheating can also include exam impersonation. A student found guilty of contributing to cheating in examinations or term assignments is also subject to serious academic penalty. Students should acquaint themselves with the University's policy on plagiarism, cheating, exam impersonation and duplicate submission (see Section 7, p. 29 in the University of Manitoba Undergraduate Calendar 09/10).

Group Work Policies: For individual assignments, students may cooperate and discuss the assignment; however, each student must hand in their own assignment, written in their own words. Duplicate assignments (either whole or in part) will be considered acts of academic dishonesty and will be subject to disciplinary action according to University policy.

*Pasture planning project: Part of the process of developing good group dynamics is the ability of group members to decide if all members are contributing effectively to group activities. As a result, a peer evaluation mark for each group will represent the average points received on the evaluation.

To do this rating, each student will rank all other students in their group. They will give a rating between 0 and 10. Ten would mean that they feel the other student contributed fully and

should get the full mark assigned to the group, while marks below ten would indicate. When making this evaluation you should consider all aspects of group interaction including being on time, quality and quantity of ideas contributed, quality and quantity of work and ability to keep the group cohesive to achieve the group objective.

The mark assigned to each group member will reflect a combination of the group mark and peer evaluation as follows; If the average peer evaluation is 8 or more, the individual will receive the full mark assigned to the group. If the mark is lower than 8, a percentage mark will be assigned.

A group folder will be created in UMLearn which may be used for this activity.

Use of Third Party Detection and Submission Tools

Electronic detection tools may be used to screen assignments in cases of suspected plagiarism.

Students Accessibility Services

Student Accessibility Services

If you are a student with a disability, please contact SAS for academic accommodation supports and services such as note-taking, interpreting, assistive technology and exam accommodations. Students who have, or think they may have, a disability (e.g. mental illness, learning, medical, hearing, injury-related, visual) are invited to contact SAS to arrange a confidential consultation.

Student Accessibility Services <http://umanitoba.ca/student/saa/accessibility/>

520 University Centre

204 474 7423

Student_accessibility@umanitoba.ca

Class Schedule

This schedule is subject to change at the discretion of the instructor and/or based on the learning needs of the students but such changes are subject to Section 2.8 of the – [ROASS-Procedure](#)).

Date	Topic	Instructor
Jan 07	Course overview	PF/EM
09	History of grasslands	PF
11	Plant/animal interaction	EM
14	Grass/plant growth	PF
16	Grass/plant growth	PF
18	Flowering	PF
21	Mixtures of species	PF
23	Digestive system of herbivores	EM

	25	Digestive system of herbivores	EM
	28	Mid term 1 (15%)	
	30	Voluntary feed intake	EM
Feb	01	Animal utilization	EM
	04	Mineral Nutrition	EM
	06	Metabolic disorders	EM
	08	Forage species	PF
	11	Forage species	PF
	13	Utilization	PF
	15	Utilization	PF
	25	Forage establishment	PF
	27	Mid term 2 (15%)	
Mar	01	Stand persistence	PF
	04	Grazing systems and management	EM
	06	Grazing systems and management	EM
	08	Pasture water systems (Guest speaker)	SMF*
	11	Seed production	PF
	13	Seed production	PF
	15	Foraging behaviour	EM
	18	Mid term 3 (15%)	
	20	Forage conservation	PF
	22	Greenhouse gas emissions	EM
	25	Water use in cattle production	GG*
	27	Sustainability	EM
	29	Wildlife habitats	EM
Apr	01	Organic systems	EM
	03	Grassland cattle production: global perspective	EM
	05	Class overview	EM
	08	Mid term 4 (15%)	PF/EM

***Guest lecturers**

Important Dates

February 19 - 22	Mid-Term break: No classes or examinations in most faculties and schools
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March 20	Last day for Voluntary Withdrawal from all Fall/Winter Term 2017/2018 and Winter Term 2018 courses Some faculties have courses with irregular withdrawal dates, see your faculty general office for information
April 19	Good Friday – University closed – no classes
April 09	Classes end in most faculties and schools.

Results on Performance Prior to Voluntary Withdrawal Deadline

Results on student performance will be provided before voluntary withdrawal date (approximately 50% of total grade).

Instructional Methods

A combination of instructional methods will be used in this course. Traditional in class lectures will be delivered in combination with group discussions. Guest speakers will also be invited to give lectures, enhancing the applicability of the information given. Laboratory sessions will be used for practical instruction on plant identification and how to develop a grazing plan for any livestock operation.

Lab Schedule

Date	Lab Content	Required Readings or Pre-Class Preparations	Evaluation
Jan 07	Seeding experiments and forage and pasture seed identification	Lab manual	Laboratory write-up (10%) and Plant ID test.
Jan 14	Legume seedling identification	Lab manual	Plant ID test
Jan 21	Grass seedling identification	Lab manual	Plant ID test
Jan 28	Mature plant identification (legume)	Lab manual	Plant ID test
Feb 04	Mature plant identification (grasses)	Lab manual	Plant ID test

Feb 11	Plant ID test	Greenhouse plants	10% of final grade
Feb 25	TBC		NA
Mar 04	Stocking Density	Class notes	Stocking density assignment
March 11	Pasture planning – guest speaker	Guest speaker notes	NA
March 18	Greenhouse gas - Holos	Holos	Carbon footprint of pasture plan operation
March 25	Pasture Plan	Class notes	Group pasture plan project

Course Evaluation Methods

Due Date:	Assessment Tool	Value of Final Grade
Jan 28	Mid term 1	15%
Feb 27	Mid term 2	15%
March 18	Mid term 3	15%
April 08	Mid term 4	15%

Grade evaluations

The grade will be evaluated through a combination of examinations, assignments, class participation and discussion.

Assignment Descriptions

Description of Assignments

1. Forage Lab - Seed Establishment
 - Laboratory (GH) establishment of perennials seeds.
2. Stocking density assignment
 - Calculations of stocking density required for proper pasture management
3. Greenhouse Gas assessment of Livestock system
 - Calculation of the annual greenhouse gas footprint of a cow/calf operation
4. Grazing Plan
 - Utilizing stocking density calculations and the information provided from course lectures and guest speakers to design an annual grazing plan for your cow/calf operation to include summer and fall grazing.

Assignment Due Dates

Due Date:	Assessment Tool	Value of Final Grade
Feb 15	Lab report	10%
March 27	Stocking density assignment	2.5%
April 03	Greenhouse gas carbon footprint (group)	2.5%
April 03	Grazing Plan (group)	15%

Assignment Extension and Late Submission Policy

Late Assignments: Assignments must be submitted by the end of the day (4:30pm) on the date that it is due. There will be a 10% deduction for every 24-hour period the assignment is late.

Missed Assignments: Unexcused missed assignments will be given a grade of zero. Where assignments are missed and excused through written notification such as a doctor's certificate of illness, evidence of death in the family, or other circumstances that are beyond the control of the student, the student may be given the following options: 1) complete the assignment and receive the late assignment penalty as describe above; 2) establish a new due date with the instructor and complete the assignment without penalty when handed in by the new due date; or, 3) the final grade will be determined by increasing the value of the final examine by the amount that would have been allocated to the missed assignment.

Missed Exams: Unexcused missed exams will be given a grade of zero. Where exams other than the final exam are missed and excused through written notification such as a doctor's certificate of illness, evidence of death in the family, or other circumstances that are beyond the control of the student, the student may be given the following options: i) re-schedule a date for the exam with the instructor and complete the exam at that time (the instructor has the option to set a different exam); or, 2) the final grade will be determined by increasing the value of the final examine by the amount that would have been allocated to the missed exam. If the final exam is missed and an appropriate excuse has been provided, another exam date will be set at the discretion of the instructor.

Schedule "A" – Policies and Resources for Students**Student Accessibility Services**

If you are a student with a disability, please contact SAS for academic accommodation supports and services such as note-taking, interpreting, assistive technology and exam accommodations. Students who have, or think they may have, a disability (e.g. mental illness, learning, medical, hearing, injury-related, visual) are invited to contact SAS to arrange a confidential consultation.

Student Accessibility Services website:

<http://umanitoba.ca/student/saa/accessibility/>

520 University Centre
204 474 7423
Student_accessibility@umanitoba.ca

Writing and Learning Support

The Academic Learning Centre (ALC) offers services that may be helpful to you throughout your academic program. Through the ALC, you can meet with a learning specialist to discuss concerns such as time management, learning strategies, and test-taking strategies. The ALC also offers peer supported study groups called Supplemental Instruction (SI) for certain courses that students have typically found difficult. In these study groups, students have opportunities to ask questions, compare notes, discuss content, solve practice problems, and develop new study strategies in a group-learning format.

You can also meet one-to-one with a writing tutor who can give you feedback at any stage of the writing process, whether you are just beginning to work on a written assignment or already have a draft. If you are interested in meeting with a writing tutor, reserve your appointment two to three days in advance of the time you would like to meet. Also, plan to meet with a writing tutor a few days before your paper is due so that you have time to work with the tutor's feedback.

These Academic Learning Centre services are free for U of M students. For more information, please visit the Academic Learning Centre website at:
<http://umanitoba.ca/student/academiclearning/>

You can also contact the Academic Learning Centre by calling 204-480-1481 or by visiting 201 Tier Building.

University of Manitoba Libraries (UML)

As the primary contact for all research needs, your liaison librarian can play a vital role when completing academic papers and assignments. Liaisons can answer questions about managing citations, or locating appropriate resources, and will address any other concerns you may have, regarding the research process. Liaisons can be contacted by email or phone, and are also available to meet with you in-person. A complete list of liaison librarians can be found by subject or by name: <http://bit.ly/1tJ0bB4>. In addition, general library assistance is provided in person at 19 University Libraries, located on both the Fort Garry and Bannatyne campuses, as well as in many Winnipeg hospitals. For a listing of all libraries, please consult the following: <http://bit.ly/1sXe6RA>. When working remotely, students can also receive help online, via the Ask-a-Librarian chat found on the Libraries' homepage: www.umanitoba.ca/libraries.

For 24/7 mental health support, contact the Mobile Crisis Service at 204-940-1781.

Student Counselling Centre

Contact SCC if you are concerned about any aspect of your mental health, including anxiety, stress, or depression, or for help with relationships or other life concerns. SCC offers crisis services as well as individual, couple, and group counselling. *Student Counselling Centre*: <http://umanitoba.ca/student/counselling/index.html>

474 University Centre or S207 Medical Services
(204) 474-8592

Student Support Case Management

Contact the Student Support Case Management team if you are concerned about yourself or another student and don't know where to turn. SSCM helps connect students with on and off campus resources, provides safety planning, and offers other supports, including consultation, educational workshops, and referral to the STATIS threat assessment team.

Student Support Intake Assistant <http://umanitoba.ca/student/case-manager/index.html>

520 University Centre
(204) 474-7423

University Health Service

Contact UHS for any medical concerns, including mental health problems. UHS offers a full range of medical services to students, including psychiatric consultation.

University Health Service <http://umanitoba.ca/student/health/>

104 University Centre, Fort Garry Campus
(204) 474-8411 (Business hours or after hours/urgent calls)

Health and Wellness

Contact our Health and Wellness Educator if you are interested in information on a broad range of health topics, including physical and mental health concerns, alcohol and substance use harms, and sexual assault.

Health and Wellness Educator <http://umanitoba.ca/student/health-wellness/welcome.html>

Katie.Kutryk@umanitoba.ca

469 University Centre
(204) 295-9032

Live Well @ UofM

For comprehensive information about the full range of health and wellness resources available on campus, visit the Live Well @ UofM site:

<http://umanitoba.ca/student/livewell/index.html>

Notice Regarding Copyright

All students are required to respect copyright as per Canada's *Copyright Act*. Staff and students play a key role in the University's copyright compliance as we balance user rights for educational purposes with the rights of content creators from around the world. The Copyright Office provides copyright resources and support for all members of the University of Manitoba community. Visit <http://umanitoba.ca/copyright> for more information.

Your rights and responsibilities

As a student of the University of Manitoba you have rights and responsibilities. It is important for you to know what you can expect from the University as a student and to understand what the University expects from you. Become familiar with the policies and procedures of the University and the regulations that are specific to your faculty, college or school.

The [Academic Calendar](http://umanitoba.ca/student/records/academiccalendar.html) <http://umanitoba.ca/student/records/academiccalendar.html> is one important source of information. View the sections *University Policies and Procedures* and *General Academic Regulations*.

While all of the information contained in these two sections is important, the following information is highlighted.

- If you have questions about your grades, talk to your instructor. There is a process for term work and final **grade appeals**. Note that you have the right to access your final examination scripts. See the Registrar's Office website for more information including appeal deadline dates and the appeal form <http://umanitoba.ca/registrar/>
- You are expected to view the General Academic Regulation section within the Academic Calendar and specifically read the **Academic Integrity** regulation. Consult the course syllabus or ask your instructor for additional information about demonstrating academic integrity in your academic work. Visit the Academic Integrity Site for tools and support <http://umanitoba.ca/academicintegrity/> View the **Student Academic Misconduct** procedure for more information.
- The University is committed to a respectful work and learning environment. You have the right to be treated with respect and you are expected to conduct yourself in an appropriate respectful manner. Policies governing behavior include the:

Respectful Work and Learning Environment

http://umanitoba.ca/admin/governance/governing_documents/community/230.html

Student Discipline

http://umanitoba.ca/admin/governance/governing_documents/students/student_dis

[cipline.html](#) and,

Violent or Threatening Behaviour

http://umanitoba.ca/admin/governance/governing_documents/community/669.html

- If you experience **Sexual Assault** or know a member of the University community who has, it is important to know there is a policy that provides information about the supports available to those who disclose and outlines a process for reporting. The **Sexual Assault** policy may be found at:
http://umanitoba.ca/admin/governance/governing_documents/community/230.html
More information and resources can be found by reviewing the Sexual Assault site
<http://umanitoba.ca/student/sexual-assault/>
- For information about rights and responsibilities regarding **Intellectual Property** view the policy
http://umanitoba.ca/admin/governance/governing_documents/community/235.html

For information on regulations that are specific to your academic program, read the section in the Academic Calendar and on the respective faculty/college/school web site
<http://umanitoba.ca/faculties/>

Contact an **Academic Advisor** within our faculty/college or school for questions about your academic program and regulations <http://umanitoba.ca/academic-advisors/>

Student Advocacy

Contact Student Advocacy if you want to know more about your rights and responsibilities as a student, have questions about policies and procedures, and/or want support in dealing with academic or discipline concerns.

<http://umanitoba.ca/student/advocacy/>

520 University Centre

204 474 7423

student_advocacy@umanitoba.ca